Employing State-of-the-Art Technology for Diagnostics

The Texas A&M Veterinary Medical Diagnostic Laboratory (TVMDL) employs advanced diagnostic equipment to improve laboratory efficiency and accuracy.

Here is a brief list of diagnostic technology TVMDL can utilize to perform your tests. With the newest in analytical equipment backing highly skilled diagnosticians, TVMDL can continue to bring timely, accurate results to clients.

Bacteriology

The Bacteriology Section in College Station transitioned to routine bacterial identification to the Matrix-Assisted Laser Desorption Ionization- Time of Flight Mass Spectrometer, also called the MALDI-TOF or MALDI.

MALDI-TOF | The MALDI identifies bacteria by measuring the charge-to-mass ratios of ionized proteins and comparing the patterns to those in a validated database. While initial culture to obtain isolated bacterial colonies is still required, the MALDI can then identify bacteria in less than an hour. The technology is being used alongside traditional identification methods to compare results. Though the MALDI will soon become the primary means of bacterial identification, the Bacteriology Section will maintain the full complement of identification methods required by a state-of-the-art diagnostic bacteriology laboratory.

Analytical Chemistry

The Analytical Chemistry section utilizes an array of highly sophisticated analytical instruments for a variety of tests, from identifying bladder stones to detecting drugs.

Liquid Chromatography – Mass Spectrometry (LC/MS) | The Analytical Chemistry section is equipped with six LC/MS systems: four triple quadrupoles, one ion trap, and one Orbitrap. LC/MS systems separate target compounds from complex mixtures using a liquid phase. Target ions are detected in the mass spectrometer. LC/MS is employed to identify numerous drugs, including therapeutic, steroid, and illicit drugs; and many toxins, such as cantharidin, anticoagulant rodenticides, and ionophores.
Our highly sensitive LC/MS systems offer the capability to detect trace amounts (i.e. $1 \times 10\text{-}12$) of some substances.

Gas Chromatography – Mass Spectrometry (GC/MS) | GC/MS systems are used to identify environmental toxins, such as petroleum hydrocarbons and pesticides. Expansive instrument libraries also aid in identifying unknowns.

Fourier-Transfer Infrared Spectroscopy (FTIR) | FTIR is a technique used to obtain an infrared spectrum of absorption that aids in identifying the composition of uroliths.

Inductively Coupled Plasma Mass Spectrometry (ICP/MS) | ICP/MS uses an inductively coupled plasma to ionize samples to aid in detection and measurement of minerals and metals.